XSD27ZIR

Day/Night 550/600 TVL IR Speed Dome Camera with 27x Optical Zoom, 50 Metres IR Night Vision & Power Supply

USER MANUAL

Xvision

Please read this manual before you install or start using the XSD27ZIR Speed Dome

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FEATURES

Product Features

- Day/Night Camera with 18x SRLEDs for an IR range of 60m
- Offers High Resolution 550/600 TVL images
- Sleek design for professional applications
- Cable Managed Bracket for external wall mounting
- Features System Preheat for use in low temperature environments
- Programmable Multi-protocol
- 360° continuous Pan, 180°Tilt "Auto Flip"
- 220 presets, ±0.1° preset accuracy
- 300°/s Pan/Tilt Preset Speed
- Can record up to 4 tours, each with up to 27 presets points
- Supports up to 4 patterns, 4 cruises, 8 titled zones which can be set to specific requirements
- Password Protection
- Multiple RS485 protocols
- On-Screen Display can be customized to suit user
- OSD Menu for Programmable Functions
- Variable Cruise Speed 0.1-150°/sec
- Variable Pan/Tilt Speed
- Vertical Tilt Unobstructed 0° to -90°
- Auto Running Memory Against Power Outage
- Features Auto Running for when the system is idle
- On-Screen display for compass and tilt angle, System and environment temperature & fan status
- Designed for external wall mounting as supplied
- Pole Mount, Pendant Ceiling Mount and Corner Mount brackets also available

Power

- 24V AC Input Power
- Built in surge protection
- Limited lighting protection
- Power Consumption: 10VA (Heater OFF), 45VA (Heater ON)
- Fuse: 1.25A

Operating Temperature

Model	Absolute Max	Sustained Max	Absolute Min	Sustained Min
XSD27ZIR	140°F (60°C)	122°F (50°C)	-60°F (-51°C)	-50°F (-45°C)

Note:
1. Assume no wind chill factor
2. Prevents icing at sustained minimum of -50°F (-45°C)
3. De-ices 0.1 inch (2.5 mm) within 3 hours after power-up

TECHNICAL SPECIFICATIONS

Image Sensor	1/4" Super HAD
Image Resolution	550/600 TVL
Lens	3.9 to 105.3mm
Zoom	27x
Zoom Speed	3.9 to 6.3 seconds
Angle of View	1° to 60°
Sync system	Internal/external
Min. Illumination	0 Lux with IR on
S/N Ratio	>48db
Iris	Auto/Manual
White Balance	Auto/Manual
Gain	Auto
AE Control	Auto/Manual
BLC	On/Off
Privacy Mask	No
Focusing system	Auto/Manual
Video Output	BNC Output

DECLARATION

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

PRECAUTIONS:

- Only qualified and experienced person can carry out the installation. In many countries and areas licensed personnel is required
- Always take safety codes into consideration during installation.
- Use reliable tools only, poor quality tools may cause damage to both human and property
- Check the strength of all item onsite that are related to installation in advance. It is recommended that the stand of dome be 8 times stronger than the weight of the dome and its accessories.
- Keep all the original dome package materials in case of future repacking and transportation.
- Choose and install speed dome according to environment requirement (Refer to the Product Features). This product conforms to IP66 standard as specified in "Housing Protection Classification (IP code)".

WARNINGS:

- Avoid installing this speed dome in hazardous places where inflammable or explosive materials are stored or used.
- Indoor dome is not designed for outdoor environment.
- This speed dome runs on 24V AC.
- Connect to power only after completing installation.
- Disassemble can only be carried out by qualified personnel.
- Use soft towel to clean the down cover when necessary. Avoid using caustic detergent.
- Avoid aiming camera to strong light.

INSTALLATION PREPARATION

TOOL LIST:

Following tools may be needed for the installation:

1. Screws and nuts
2. Philips screw driver
3. Standard screw driver
4. Wire scissors
5. Ladder
6. Drill
7. Saw.

CABLING:

8. Video Coaxial Cable
9. 75Ω impedance,
10. Solid copper wire,
11. 95% braided copper shield.

Check the max transmission distance referring to the chart below.

Cable Type	Distance
RG 59/U	750ft(229m)
RG 6/U	1,000ft(305m)
RG 16/U	1,5000ft(457m)

12. RS485 Cable
13. 0.56mm (24AWG) twisted pair wire

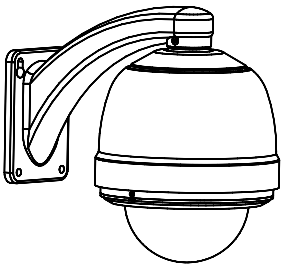
DIP SWITCH SETTING

See Appendix I:

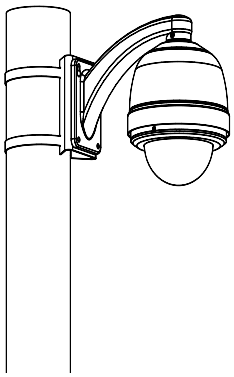
14. Protocol and Baud rate
15. Dome address
16. Video cable type
17. Resistor jumper

MOUNT TYPE

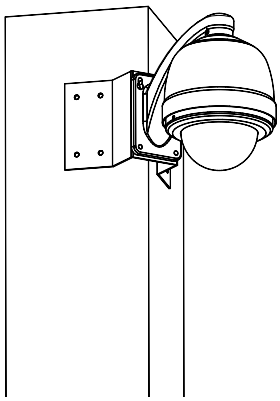
- WALL MOUNT (supplied)



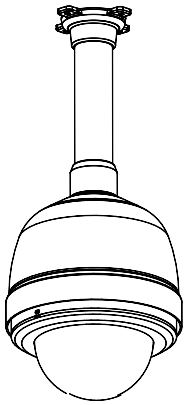
- POLE MOUNT (optional accessory)



- CORNER MOUNT (optional accessory)



- PENDANT MOUNT (optional accessory)



INSTALLATION GUIDE

■ WALL MOUNT

Check to make sure the wall surface is firm and does not flake off. The wall must be able to withstand 8 times weight of the dome and its fixtures.

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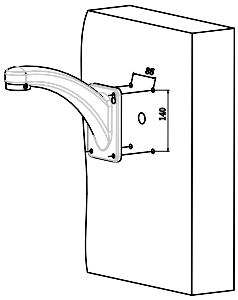
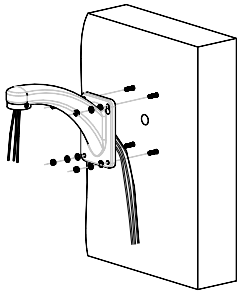
1. Mark mounting position

Use bracket to mark the mounting position on wall



2. Install bracket.

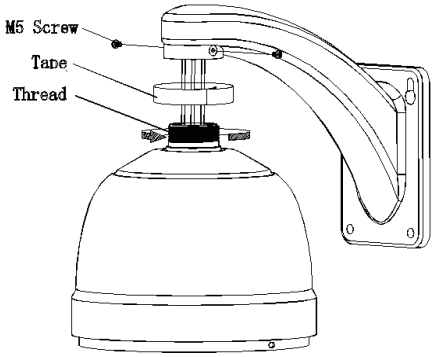
Feed all cables through the hole of bracket, and fix the bracket on the wall



3. Install housing

Feed the cables through the hole on top of the housing. Align the dome casing to the bracket and fix with 2 M5 screws as shown.

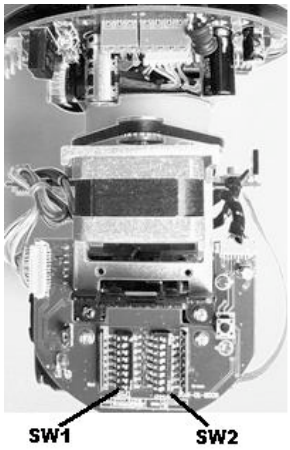
NOTE: Apply water-proof tape to the thread when mounting externally



4. Set dome ID, baud rate and protocol

Set dome ID, bard rate and protocol by configuring DIP switches (see APPENDIX I).

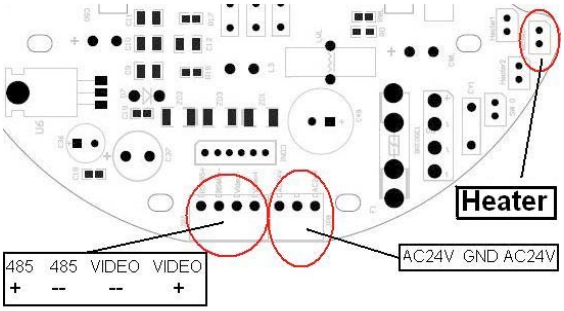
NOTE: Remove the packing sponges



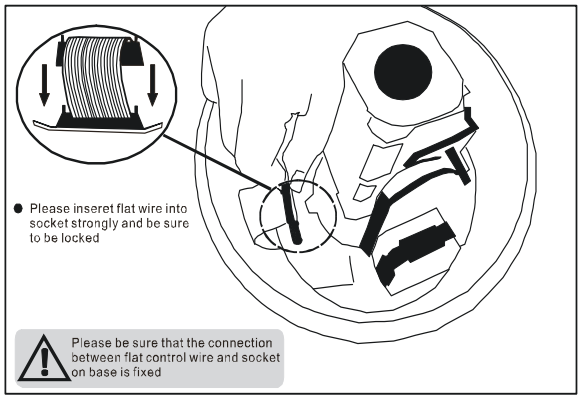
5. Connect cables.

Plug cables into corresponding sockets on circuit board. Reinstall the circuit board and turn on the power. Turn off the power after checking.

NOTE: Names of the interfaces are marked on the terminal block or PCB. Connect cables as shown in the diagram. Make sure power is off before connecting.



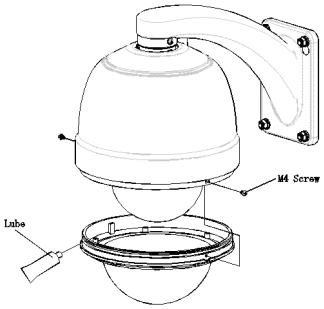
6. Install black liner and Pan/Tilt Module


Please inseret flat wire into socket strongly and be sure to be locked
Please be sure that the connection between flat control wire and socket on base is fixed

7. Install down cover

Unscrew the two M4 screw on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

NOTE: Apply lube to the O-ring for external mounting

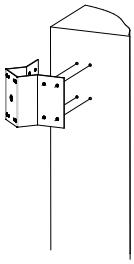


■ CORNER MOUNT

Check carefully to make sure the wall is firm and does not peel off. It is required that the wall can withstand 8 times weight of the dome set.

1. Mark the fastener positions.

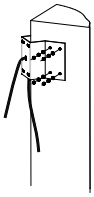
Use the corner mount base as the template to mark the mounting positions on wall.



2. Install base.

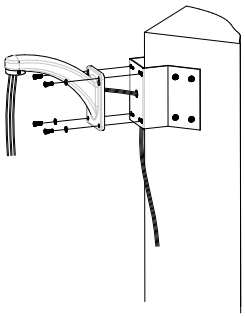
Feed the Power/RS485 Video cables through the hole of corner mount base and use M8 nuts to fasten corner base on the mounting surface.

NOTE: Put cables through the wall of aside the corner base



3. Install bracket.

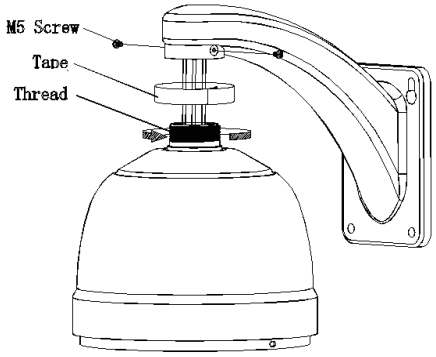
Put cables through the cavity of bracket and fasten bracket on base



4. Install housing

Feed the cables through the hole on top of the housing. Align the dome casing to the bracket and fix with 2 M5 screws as shown.

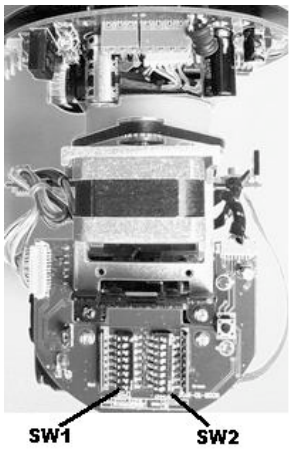
NOTE: Apply water-proof tape to the thread in the case of outdoor dome



5. Set dome ID, baud rate and protocol

Set dome ID, bard rate and protocol by configuring DIP switches (see APPENDIX I).

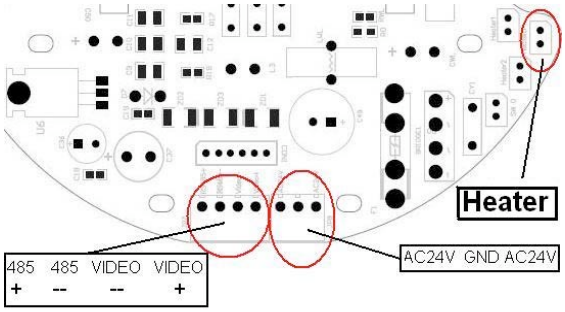
NOTE: Remove the packing sponges



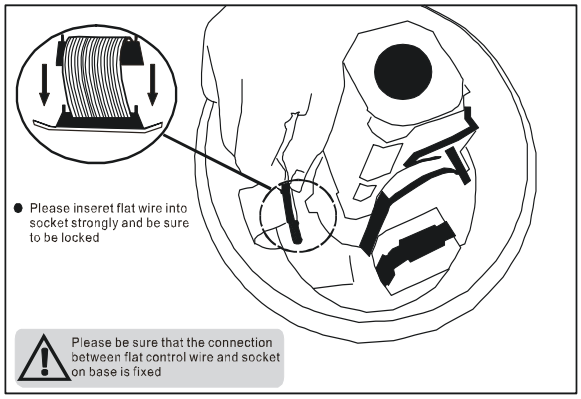
6. Connect cables.

Plug cables into corresponding sockets on circuit board. Reinstall the circuit board and turn on the power. Turn off the power after checking.

NOTE: Names of the interfaces are marked on the terminal block or PCB. Connect cables as shown in the diagram. Make sure power is off before connecting.



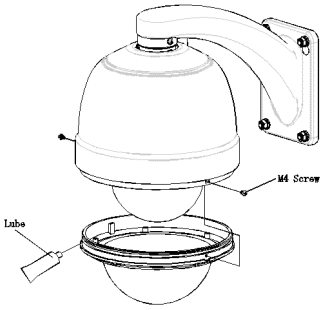
7. Install black liner and Pan/Tilt Module


Please inseret flat wire into socket strongly and be sure to be locked
Please be sure that the connection between flat control wire and socket on base is fixed

8. Install down cover

Unscrew the two M4 screw on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

NOTE: Apply lube to the O-ring for external mounting

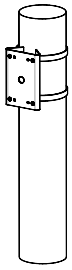


■ POLE MOUNT

The Pole mount can be installed on pole with diameter of 130 to150mm (5.12" to 6")

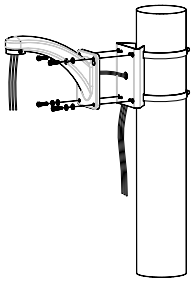
1. Install base.

Feed the Power/RS485/ Video cables through the central hole of the bracket base, and then fix it to the pole



2. Install bracket.

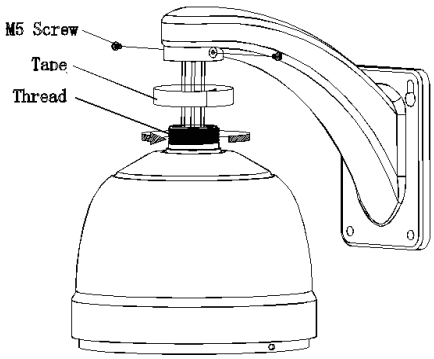
Put cables through the cavity of bracket and fasten it on base.



3. Install housing

Conduct cables through the hole on top of the housing. Align the fast connector to bracket and fix with 2 M5 screws.

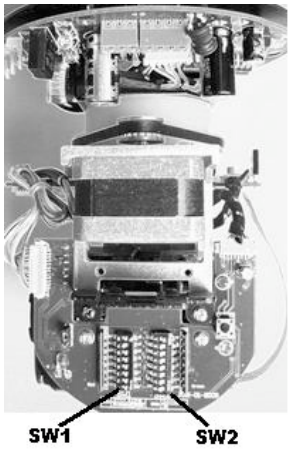
NOTE: Apply water-proof tape to the thread for external mounting



4. Set dome ID, baud rate and protocol

Set dome ID, bard rate and protocol by configuring DIP switches (see APPENDIX I).

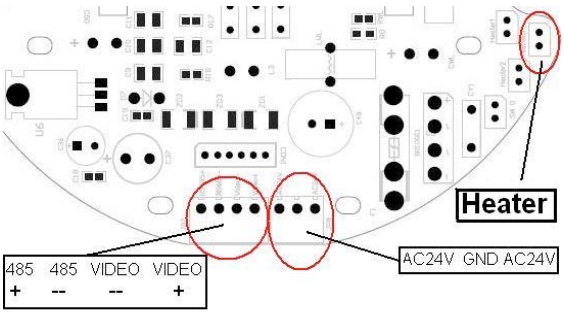
NOTE: Remove the packing sponges



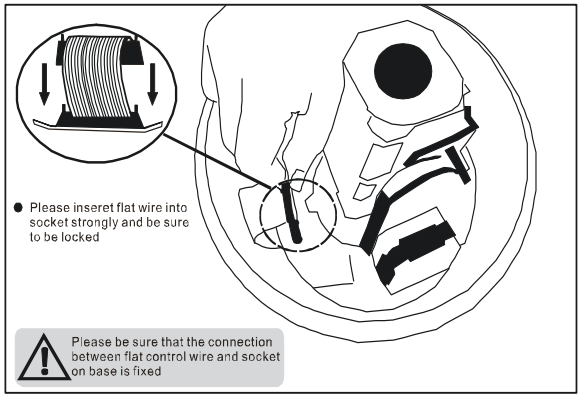
5. Connect cables.

Plug cables into corresponding sockets on circuit board. Reinstall the circuit board and turn on the power. Turn off the power after checking.

NOTE: Names of the interfaces are marked on the terminal block or PCB. Connect cables as shown in the diagram. Make sure power is off before connecting.



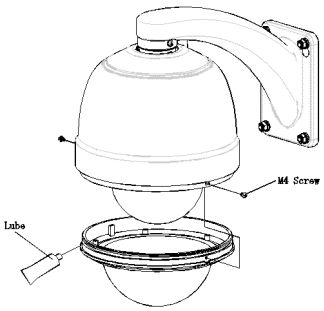
6. Install black liner and Pan/Tilt Module


Please inseret flat wire into socket strongly and be sure to be locked
Please be sure that the connection between flat control wire and socket on base is fixed

7. Install down cover

Unscrew the two M4 screw on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

NOTE: Apply lube to the O-ring for external mounting

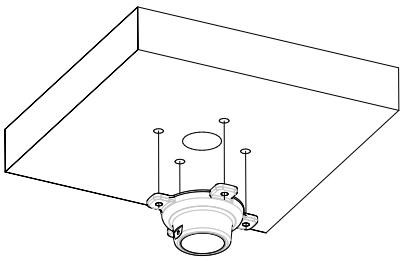


■ PENDENT MOUNT

For low ceiling installations, dome can be mounted directly into the base flange.

1. Mark the mounting position.

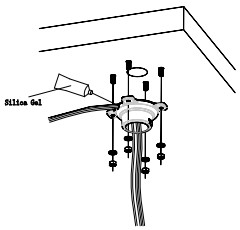
Use the bracket base to mark the fastener positions on ceiling.



2. Install base.

Feed the cabling through the central hole of the bracket base, and then fix it on ceiling.

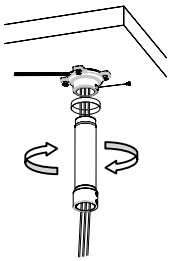
NOTE: Put silica gel along the top of bracket base for external mounting



3. **Install suspender.**

Feed the cabling through the cavity of suspender, and then turn the threaded pipe head into the bracket base and fasten the connection with a M5 screw.

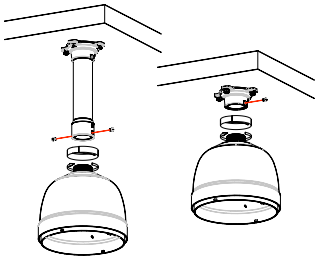
NOTE: Apply waterproof tape to the thread and put silica gel to the suspender for external mounting.



4. **Install housing.**

Feed cables through the top hole of the housing, and then turn the housing thread pipe head into suspender and fasten the connection with two M5 screws

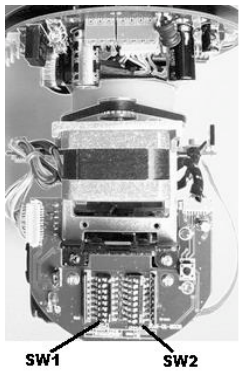
NOTE: Apply waterproof tape to the thread for external moutning. If installation height is not high enough, mount housing directly into the base.



5. Set dome ID, baud rate and protocol

Set dome ID, bard rate and protocol by configuring DIP switches (see APPENDIX I).

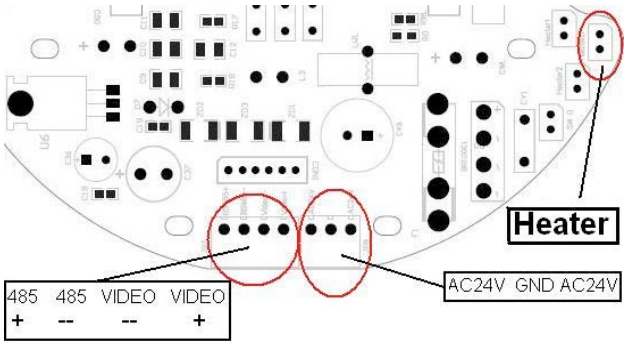
NOTE: Remove the packing sponges



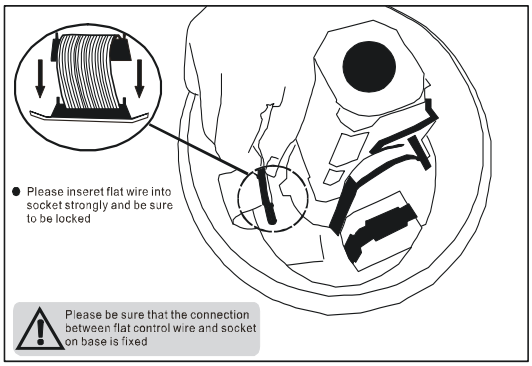
6. Connect cables.

Plug cables into corresponding sockets on circuit board. Reinstall the circuit board and turn on the power. Turn off the power after checking.

NOTE: Names of the interfaces are marked on terminal block or PCB. Connect cables as picture shows. Make sure power is off before connecting



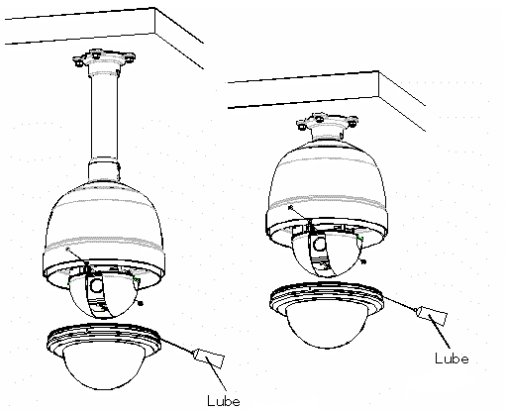
7. Install black liner and Pan/Tilt Module


Please inseret flat wire into socket strongly and be sure to be locked
Please be sure that the connection between flat control wire and socket on base is fixed

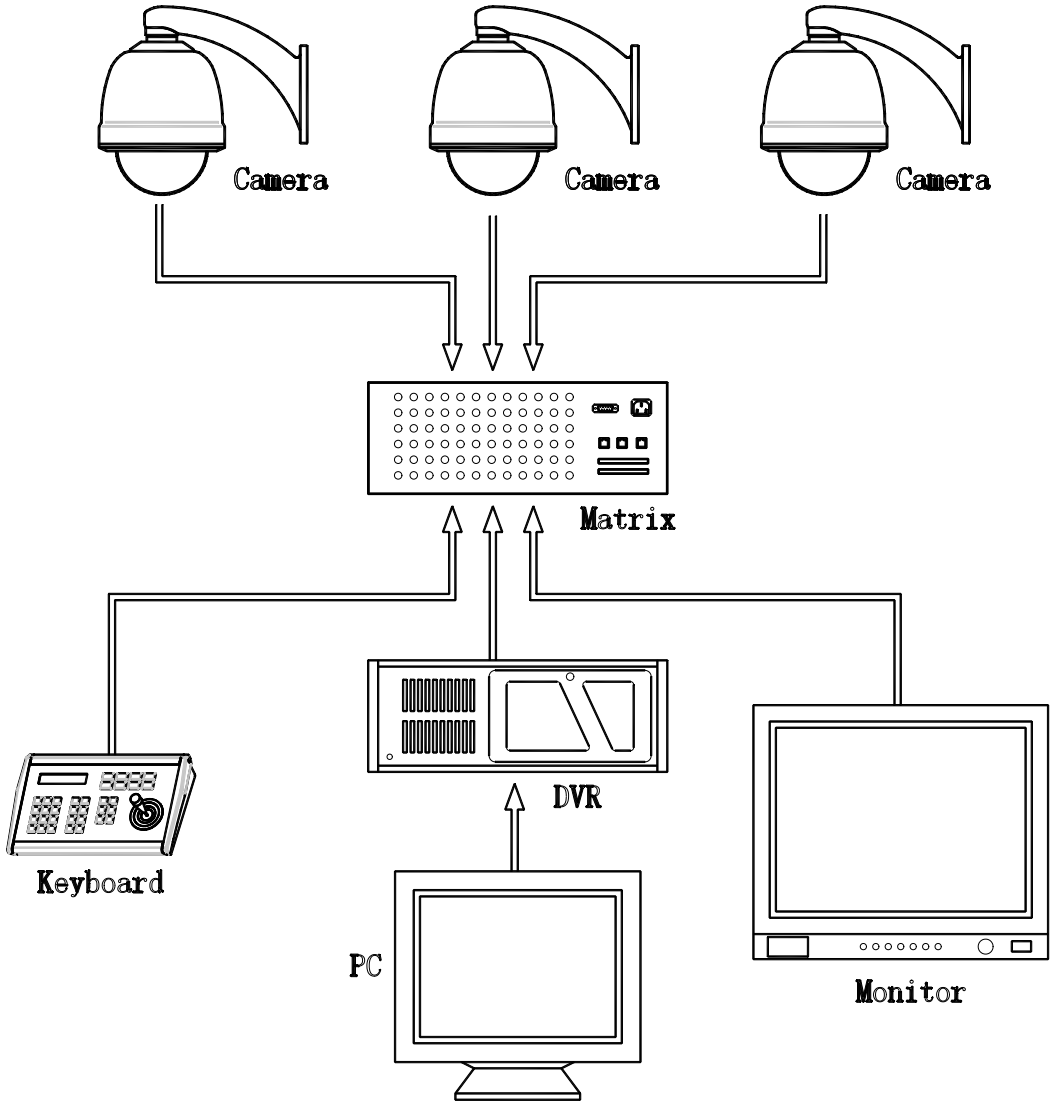
8. Install down cover.

Unscrew the two M4 screws on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

NOTE: Apply the lube to the O-ring in the case of outdoor dome



SYSTEM CONNECTION



OPERATION INSTRUCTIONS

The Speed Dome can be controlled through combination of hot keys on a keyboard controller. It can also be controlled through the OSD menu. The OSD menu can be activated by preset #95 call or double calling preset 1 (call twice within 5 seconds). Preset calling can be done through a keyboard controller or any other device (e.g. a computer) that can send commands to the speed dome.

OSD menu operations are specified as follow:

■PREHEATING SCREEN

When power on the dome and system temperature is under -15C/5F，following screen shows up:

```
Outer Temp:   -030C/-022F
System Temp: -020C/-004F
Fan Speed:     6480rpm
System Under -15C/5F
System Heating Up
Please Wait…
```

The system will heat up until the system temperature is above -15C/5F. System starts to boot up after heating up finishes.

- **< Outer Temp >**
  Environment temperature XXC/XXF
  C: ° Celsius；
  F: ° Fahrenheit
- **< System Tem >**
  System inner temperature
- **< Fan Speed >**
  The rotating speed of the fan.

■BOOT-UP SCREEN

When power on or restart the dome, the boot up information will display on screen and then the dome will begin self-testing. "System booting up…" will show on the screen until "boot-up success" shows up. The whole boot up process lasts about 40 seconds. This screen display disappears once the dome receives any effective command.

```
Protocol      : Ernitec
Baud Rate   : 4800BPS
Camera ID   : 001
Camera S/N  : 8888888888
Model         : ----------
Version       : 8.01
Outer Temp  :022C/071F
System Tem  :027C/080F
Booting Up… …
```

- **<Protocol>**
  Dome control protocol.
- **<Baud Rate>**
  Dome control baud rate
- **<Camera ID>**
  The dome ID address set by dip switch or keyboard. (See APPENDX I)
- **<Camera S/N>**
  Camera serial number.
- **<Model>**
  Speed dome model number
- **<Version>**
  Hardware and software version

```
Protocol      : Ernitec
Baud Rate   : 4800BPS
Camera ID   : 001
Camera S/N : 8888888888
Model         : ----------
Version       : 8.01
Outer Temp :022C/071F
System Tem:027C/080F
Bootup Success
```

■ACCESSING MAIN MENU

- Display the dome's main menu on your monitor by calling preset 95 or calling preset 1 twice within 5 seconds.

  Note: For third party keyboard controllers please read user manuals as command to a preset may not be the same among different manufacturers.
- In case password protection is in effect, input the correct 6-bit password to enter the OSD menu. (Default password is 123456).
- To enter password, move the joystick up or down to select number (0-9), move the joystick left or right to choose password the digits. If the input password is wrong, the password input window will disappear.
  The OSD menu will close automatically after 1 minute without any operation. All the settings will be saved automatically to protect against power outage.

MENU OPERATION

■SELECTING A MENU ITEM

In the main menu, the cursor flashes on the left side. Move the joystick up or down to point to the desired item. Then, move the joystick right to select the item.

Select an item to enter its sub menu or run a specific function or change its value or edit its title.

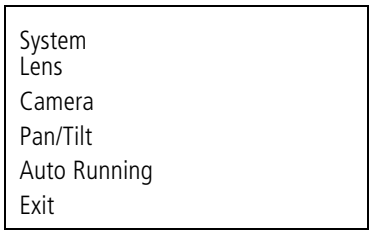
■CHANGING VALUES

Move the joystick up or down to change the value, move the joystick left to save the setting and exit. In the case of multiple digits value, move left or right to select digits, move up or down to change value, move left to save the setting and exit.

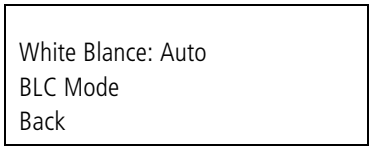
Note: To increase the value changing speed, hold the joystick up or down for more than 10 seconds.

For example: In order to change BLC LEVEL, please follow these steps**:**

1. Call preset 95 or call preset 1 twice within 5 seconds to access the Main Menu.



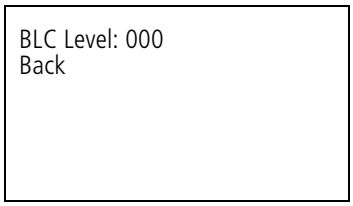
2. Move the joystick down to point the cursor to <Camera >, move the joystick right to select it. Select BLC MODE in the same way



NOTE: In this manual menu paths are written in the following format:

<Main Menu> → <Camera > →<BLC Mode> → <BLC Level>

3. The <BLC Level> option blinks. Move the joystick up or down to change the option, move the joystick left to save the changing.



When finished, select <Back> to return to upper menu.

SYSTEM MENU

■SYSTEM MENU OPTIONS

<Main Menu> → <System >

Site Info
Display Setup
Bootup Screen
Password
Set Default
System Reboot
Back

SYSTEM INFO includes following settings.

- **<Site Info>**
  Dome ID, name, broadcast address.
- **<Display Setup>**
  Screen display
- **<Bootup Screen>**
  Display boot-up information
- **<Password>**
  Change password
- **<Set Default>**
  Restore factory default settings
- **<Reboot System>**
  Reboot dome system

■SITE INFO

<Main Menu> → <System > → <Site Info>

Site ID: 007 Name: Is Bond
Broadcast Add: 255
Back

- **<Site ID>**

  Shows the current dome's ID. Each dome has its unique ID. ID ranges from 001 to 254. NOTE: <Site ID> can be set by menu only when DIP switch is set to 'programmable ID'.

  Move the cursor to <Site ID> and then move the joystick right to enter dome ID setting, sub-menu as follow.

Site S/N :8888899999 Input S/N:0000000000
Back

  Move the cursor to <Input S/N> then move the joystick right, input the serial number according to the <Site S/N>, and then move the joystick left to exit setting. Go to <Back>, and move joystick right to exit. Finally, move joystick up or down to select desired ID number. Move the joystick left to save the settings.

- **<Name>**

  <Name> refers to the title of the dome. Assign a dome name to remember which dome it is.

- **<Broadcast Add>**

  Used to set the broadcast ID number. The ID functions the same as dome's site ID, default setting is 255. The dome responds to commands sent to either ID. Refer to <Changing Values> to learn how to set the broadcast address)

  Select BACK to return to upper menu.

■DISPLAY SETUP

<Main Menu> → <System > → <Display Setup>

Site Name: On
Preset Title: On
Cruise Title: On
Pattern Name: On
Orientation: On
Zone Name: On
Cross Curser: On/Off
Back

The on screen display can be customized using this menu.

- **<Site Name>**
  Choose to display the site name
- **<Preset Title>**
  Choose to display cruise title when the dome is in cruise mode
- **<Cruise Title>**
  Choose to display preset title when calling preset
- **<Pattern Name>**
  Choose to display pattern title when the dome is replaying pattern sequences
- **<Orientation>**
  Choose to display the current lens pointing direction
- **<Zone Name>**
  Choose to display the current zone title

  Select BACK to return to upper menu.

■ BOOT-UP SCREEN

<Main Menu> → <System >→ <Bootup Screen>

```
Camera S/N : 8888888888
Camera ID : 001
Baud Rate : 9600bps
Model : ……
Version : 8.01
Outer Temp :022C/071F
System Tem:027C/080F
Call Preset 1 To Back
```

Bootup screen displays summary information of the dome. Values are fixed in this sub-menu. Refer to "Bootup Screen" to check the item. Call preset 1 to return to upper menu.

■ PASSWORD

<Main menu> → <System > → <Password>

```
Input Password:******
Confirm       :******
PSWD Protection: On
Back
```

◆ **<Input Password>**
Move the joystick right to enter submenu.

```
Old Password:******
Back
```

- **< Old Password >**
  Enter the old password.
- **< Back >**
  If old password is correct, cursor goes back behind <Input Password>, so that new password can be inputted. If old Password is not correct, cursor goes back to <Input Password>. Password cannot be changed in this case.

◆ **<Confirm>**
When and only when the new password is entered, can the user get to this menu. If the password is not the same as entered the first time, it remains unchanged.

◆ **< PSWD Protection>**
Password protection can be switched on and off. When it is <On> user need to enter password to access main menu or save preset through the keyboard.

NOTE: The dome's default password is 123456. Contact the supplier for the master password if the password is forgotten after changing it.

Select BACK to return to upper menu

■SET DEFAUT

<Main Menu> → <System Info> →<Set Default>

Select <Set Default> to restore factory default settings.

List of Default Settings:

Item	Default Value
Zoom Speed	High
AI/AF Resume Mode	Both
AF Resume Time	005
AF Resume Time	005
Iris ALC	084
Iris PIC	016
Day/Night	Auto
all display config	Off
Frame Limit	1/25
Shutter	Off
Exposure	Off
White Balance	Auto
BLC Level	000
Speed Amplify	Off
Proportional P/T	On
Pswd Protection	Off
Park Time	Off
Park Action	Off
Arm/Disarm	Disarm
Reset Delay	004

■SYSTEM REBOOT

<Main Menu> → <System > → <System Reboot>

Select <System Reboot> to reboot the dome.

Settings will not change after restarting.

LENS PARAMETERS MENU

■ LEN MENU OPTIONS

<Main Menu> → <Lens>

Joystick AF/AI : Both
AF Resume Time: Off
AI Resume Time : Off
Day/Night : Auto
Back

■ JOYSTICK AF/AI

<Main Menu> → <Lens> → <Joystick AF/AI>

Set automatic restore mode. When the joystick moves, the selected function will be triggered.

Options are:

[**Both**] Joystick movement triggers both auto focus and auto iris (default).
[**Focus**] Joystick movement triggers auto focus only.
[**Iris**] Joystick movement triggers auto iris only.
[**None**] Joystick movement triggers none of the functions.

■ AF RESUME TIME

<Main Menu> → <Lens> → <AF Resume time>

System defaults to Auto Focus mode, which automatically adjusts the focus to get the clear image. Focus can also be manually controlled by keyboard or matrix. For manual operation details, please refer to keyboard or matrix operation manual.
This item sets the time to restore auto focus after focus is manually changed.
The default setting is 005.
[**Off**] Never restore auto focus after switch to manual.
[**001-255**] The dome will start auto focus this number of seconds after user manually adjusts the focus.

NOTE: The camera may not be able to auto focus in the following circumstances:

- Target is not in the center of image.
- Near and far targets in the same picture cannot be both clear.
- Target is a strong light object. Such as spotlight etc.
- Target is behind the glass with water drop or dust.
- Target moves too fast.
- Large area target such as wall.
- Target is too dark or vague.
- <Joystick AF/AI> is set None or <Joystick AF/AI> is set [Iris], and Auto Focus is set to [off].

■ AI RESUME TIME

<Main Menu> → <Lens> → <AI Resume Time>

Light goes through the iris and reaches the CCD to form an image. A larger iris lets more light go through and the image will be brighter. The Iris can be controlled automatically or manually. For manual operation detail, please refer to keyboard or matrix manual.
[**Off**] Never restore auto iris after switch to manual.
[**001-255**] The dome will start Auto Iris this number of seconds after user manually adjusts the iris

■ DAY/NIGHT

<Main Menu> → <Lens> → <Day/Night>

Set the dome color/mono-chrome switching mode. Color mode is suitable to work in daytime because it needs higher illumination.
Light sensitivity of mono mode is much higher. It is suitable to work at night without illumination but the video is black and white.

- **<Auto>**
  The dome will automatically change modes according to the environment illumination. (Default setting)
- **<Night>**
  The dome will always be in monochrome mode.

NOTE: Iris ALC, Iris PLC, Day/Night works only for limited model of camera module. Please check specification.

CAMERA PARAMETERS MENU

■ CAMERA MENU OPTIONS

<Main Menu> → <Camera>

White Balance: Auto
BLC Mode
Back

■ WHITE BALANCE

<Main Menu> → <Camera> → <White Balance>

White balance is normally compensated for by the automatic white balance gain control. In some lighting conditions, user may want to manually adjust the red and blue settings for optimal viewing.

The setting options are:
[**Auto**] Auto White Balance (default setting).
[**Manual**] Manually set the red and blue values. Move the joystick right to enter the manual setting. The following window will appear.

WB-R : 000
WB-B : 000
Back

[**R Gain (000-255)]** Adjusts RED color depth
[**B Gain (000-255)]** Adjust BLUE color depth

■ BLC MODE

<Main Menu> → <Camera> → <BLC Mode>

R Gain (000-255), Adjusts RED color depth.
B Gain (000-255), Adjusts BLUE color depth.

If the backlight is bright, the objects in the center of the picture may appear dark. The dome can auto adjust the brightness of the whole image according to the brightness of center point. Thus backlight compensation can increase the brightness of the objects in the center of the picture.

If the backlight is too dark, the object on the center of the picture may appear dark. So, backlight compensation can decrease the brightness of the object.

Select BLC MODE and the editing menu will pop up.

[**000**] Disables backlight compensation function.
[**001-255**] Choose a different backlight compensation level. The greater the value means more backlight compensation will be set.

BLC Level: 000
Back

PAN/TILT PARAMETERS

■ PAN TILT MENU OPTIONS

<Main Menu> → <Pan/Tilt>

```
Auto Stop Time  : Off
Speed Amplify   : Off
Proportional P/T: Off
Set North
Back
```

■ AUTO STOP TIME

<Main Menu> → <Pan/Tilt> → <Auto Stop Time>

For some particular protocols, the dome will not stop moving even there is no operation on joystick. This menu item sets the time after which the dome receives last control command.

[**Off**] Disables this function (default setting) [**001~255**] The time (unit : 50ms) after which the speed dome will stop moving without receiving any commands.

■ SPEED AMPLIFY

<Main Menu> → <Pan/Tilt> → <Speed Amplify>

Some protocols' controlling speed is much lower, set [Speed Amplify] to accelerate the speed dome's movement. Options are as below:

[**Off**] Disable this function (default setting)
[**01× ~ 32×]** x Times greater than the original speed

■ PROPORTIONAL P/T

<Main Menu> → <Pan/Tilt> → <Proportional P/T>

The dome moves at a speed of certain degree per second. Objects on screen move much faster in wide scope than in tele-scope. Even too faster in some case. This function decreases the dome movement speed while zooming in.

[**On**] Enable (default setting)
[**Off]** Disables this function

■ SET NORTH

<Main Menu> → <Pan/Tilt> → < Set North >

User can set orientation on screen by using joystick to position north.

[**Back**] Select to go back to the main menu.

NOTE: It is recommended that the camera is set to geographic north.

AUTO RUNNING

■ AUTO RUNNING MENU OPTIONS

<Main Menu> → <Auto Running>

```
Preset
Tour
Pattern
Cruise
Zone
Park Time: Off
Park Action: Off
Back
```

■ PRESET

<Main Menu> → <Auto Running> → <Preset>

```
Preset Number : 001
Title: PRE1
Set Current
Test Current
Test Next
Remove Current
Back
```

'Preset' is the point that user save for frequent use. A 'preset' saves both direction and zoom parameter, the camera will quickly and precisely go and zoom to a specific point if a 'preset' is called. E.g. If you often want to watch the door, you can set the point of door as a 'preset', then you can quickly monitor the door simply by calling the 'preset'.

NOTE: 220 presets can be set.

- **<Preset No>**
  Displays the current preset number. The value ranges from 001 to 220. Move the joystick up or down to select desired number.
- **<Title>**
  To set the current preset title. Move the joystick right to enter <Title>, then move joystick right to desired bit and move the joystick up or down to select the letters you require.

  NOTE: You can input a maximum of 16 letters. If you are not familiar with the editing, please refer to 'Operating Instructions'.
- **<Setting>**
  Select this item to set the preset position and zoom. The following menu will pop up when <Set Current> is selected:

```
Call Preset 1 To
Confirm…….
```

  Move the camera to the desired position and zoom to a suitable level, call preset 1 to save the current preset.
- **<Remove Current>**
  Select this to delete the preset with the number and title displayed above.
- **<Back>**
  Select to go back to the upper menu.

■ TOUR

<Main Menu> → <Auto Running> → <Tour>

```
Tour Number : 001
Dwell: 001
Edit
Test
Run
Back
```

A 'tour' is a sequence of presets. When running a tour the camera moves from preset to preset and will dwell for a specific time for each preset. It is useful if you need to repeat switching among a number of presets.
E.g. A shopping mall has several entrances. A tour can automatically loop the position of each entrance.

NOTE: 4 tours can be set in the system. Each tour can contain up to 27 presets. The dwell time for each preset is independent.

- **<Tour Number>**
  Displays the current tour number. Values can be set to 001~004.
- **<Dwell>**
  Sets the default dwell time in seconds for each preset. Values can range from 0~99 seconds.

  For example, DEFAULT DWELL: 001, all presets' dwell time is set as 1 second, but user can still set independent dwell times for each preset in the <Edit> menu.

◆ **<Edit>**
Edit presets and corresponding dwell times in a tour as follows:

```
Preset-Dwell
001-001 002-004 003-002
004-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
Save And Back
Cancel And Back
```

The format for the information is displayed as:
Preset number-Dwell time

For example 003-02 means go to preset 003 and dwell for 2 seconds. Move joystick left or right to select editing item. Move up or down to change the value.

In the above example the tour starts from preset 1 dwells for 1 second, then goes to preset 2 dwell for 5 seconds, then preset 3 for 2 seconds and finally preset 4 for 1 second.

<**Save and Back**> Save the tour and exit
<**Cancel and Back**> Quit without saving

NOTE: When a preset dwell time is set 0, system will skip that preset. System will consider preset 0 as the end of a tour.

NOTE: No delete function applied to tour, edit it again to replace the previous data.

◆ **<Test>**
Select to run the current tour once. Use this function to check the tour.

◆ **<Run>**
Select to run the current tour continuously. The system will loop the tour.

◆ **<Back>**
Select to go Back to the upper menu.

■ CRUISE

<Main Menu> → <Auto Running> → <Cruise>

```
Cruise Number : 001
Left Position
Right Position
Default Speed: 001
Run
Back
```

The dome camera can pan from one left point to right point and then pan back. NOTE: Camera pans only.

NOTE: If the speed dome has been zoomed in and <Cruise> is selected, the camera will keep that zoom throughout the camera's movement.

The speed dome has a maximum of 4 cruise lines.

◆ **<Cruise Number>**
Displays the current auto scan number. The value can be set to 001~004. Move the joystick right, then up or down to select values.

◆ **<Left Position>**
Select to set the position of site A. The following menu will pop up.

```
Call Preset 1 To
Confirm…
```

Move the camera to the desired position and call preset 1 to save.

◆ **<Right Position>**
Select to set the position of site B. Set it in the same way as <Left Position>.

◆ **<Cruise Speed>**
Select to set the scanning speed (camera movement speed). Values can be set ranging from 001 to 255, the greater number represents the higher speed. Move joystick right to select, up or down to change the value.

◆ **<Run>**
Start the current auto scan (001~004)

◆ **<Back>**
Select to go back to the upper menu.

■ PATTERN

<Main Menu> → <Auto Running> → <Pattern>

```
Pattern Number:    001
Record
Test
Run
Back
```

Pattern is a replay of recorded irregular pan/tilt/zoom movements. It is useful when repeating variable speed movement of the pan/tilt/zoom.

Note: There can be as many as 4 patterns recorded, each no more than 3 minutes.

◆ **<Pattern Number>**
Displays the pattern number, value options are 001～004.

◆ **<Record>**
Select to Record a pattern. The following menu will pop up.

```
Call Preset 1 To
Confirm…
X/100
```

The user can operate the dome with pan/tilt/zoom movements as needed. The system will record the pattern of movement. To end recording user can call preset 1 to confirm and save the recording.

◆ **<Test>**
Select to Test the recorded pattern

◆ **<Run>**
Select to run the Pattern until another command is received

◆ **<Back>**
Select to go back to the upper level menu

■ ZONE

<Main Menu> → <Auto Running> → <Zone>

```
Zone Number: 001
Title: 000000000000000
Left Limit
Right Limit
Remove Current
Pan Speed：001
Run
Back
```

A zone is an area between two points. The user can set a zone and scan it automatically.

<Zone> is similar to <Cruise> except that the user can assign a title for a ZONE. Whenever the camera moves into the zone, the title will display on the screen to alert the operator.

NOTE: Camera scans horizontally only. User can set up to 8 zones.

◆ **<Zone Number>**
Displays current zone number. Values can range from 001~008. Move the joystick right then up or down to select desired value.

◆ **<Title>**
Select to set the zone title.

◆ **<Left Limit> / <Right Limit>**
Set the position of the first and second point. The following menu will pop up:

```
Call Preset 1 To
Confirm…
```

Move to the desired point and call preset 1 to confirm.

◆ **<Pan Speed>**
Select to set the pan speed (camera movement speed). Values can range from 001 to 255, the greater number represents the higher speed. Move the joystick right to select, then up or down to change value.

◆ **<Run>**
Select to start scanning the current zone set.

◆ **<Back>**
Select to go back to the upper level menu

■ PARK TIME

<Main Menu> → <Auto Running> → <Park Time>

This function lets the system automatically run an assigned function after a specific period of idle time. For example: if the dome is running a tour and an operator breaks the tour to do other work, the dome can automatically carry on the tour within a period of time after the operator stops the break.

Park time is a period of idle time without any operation.

[**Off**]: Disable this function.
[**001~255**]: Auto runs the <Park Action> after this number of seconds of idle time.

■ PARK ACTION

<Main Menu> → <Auto Running> → <Park Action>

Park action refers to the function that system will automatically run when 'park time' is up.

[**Off**] Disable this function
[**Pre 001~220**] Call preset 001~220
[**Scan 001~004**] Run auto scan 001~004
[**Tour 001~004**] Run tour 001~004
[**Pat 001~004**] Run pattern 001~004

```
Preset
Tour
Pattern
Cruise
Zone
Park Time: 010
Park Action: Pat 001
Back
```

In this example, the system will run Preset 8 after 38 seconds of 'idle' time.

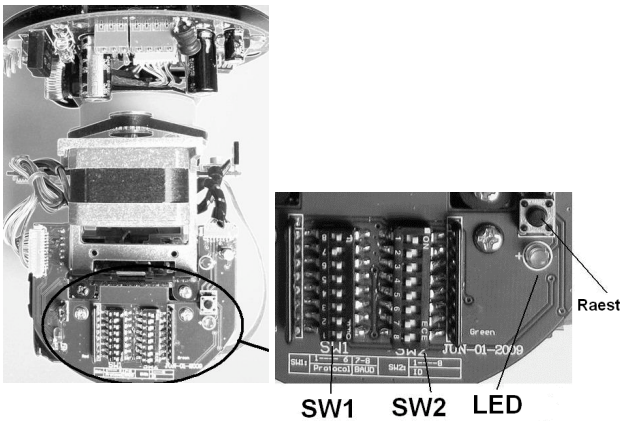
APPENDIX I:

DIP SWITCH SETTINGS

This is the guide for setting protocol, baud rate, dome address, video cable type and resistor jumper.

◆ DIP Switch position

The corresponding Dip Switch positions are shown below:



◆ Protocol and Baud Rate setting

SW1 is for protocol and baud rate settings. Bits 1~6 of SW1 are for protocol setting and bits 7~8 are for baud rate setting as shown in the chart below

Default setting is 4800 bps.

Baud Rate	Switch Digits							
	1	2	3	4	5	6	7	8
2400							OFF	OFF
4800							ON	OFF
9600							OFF	ON
19200							ON	ON

◆ Reset Button

This button is for resetting the dome after changing the dipswitch setting. The new setting works only after reboot finishes.

◆ LEDs

The flashing Green light means the control commands have reached the dome.
The Red light is on when effective command is received.

This Speed Dome supports multi-protocol. The settings are shown in the chart opposite.

Protocol	Switch Number							
	1	2	3	4	5	6	7	8
ERNITEC								
YAAN	ON							
ALEC		ON						
PELCO_PD	ON	ON						
PELCO_C			ON					
VCL	ON		ON					
MOLYNX		ON	ON					
VICON	ON	ON	ON					
DIAMOND				ON				
KALATEL	ON			ON				
HUNDA		ON		ON				
LILIN	ON	ON		ON				
SANTACHI			ON	ON				
PELCO_PDC	ON		ON	ON				
UNIVISIONV1*		ON	ON	ON				
UNIVISIONV2	ON	ON	ON	ON				
AD*					ON			
ADT	ON				ON			
PANASONIC		ON			ON			
PHILIPS*	X	X	X	X	X	ON		
Reserved4								
Reserved5								
Reserved6								
Reserved7								
Reserved8								
Reserved9								
Reserved10								
Reserved11								
Reserved12								
Reserved13								
Reserved14								
Reserved 15								

◆ Dome Address Setting

The control commands contain target dome's ID. The dome only reacts to the command sent to its own address or broadcast address.

Each dome should be assigned an address. Four kinds of IDs are applicable for domes:

1. Hard ID:
Hard ID is set via DIP SW2 cannot be changed from OSD menu. Hard ID ranges from 1 to 254.

2. Programmable ID:
Set all 8bits of SW2 to ON to activate soft address.
Input 10-bit camera SN number, and then set dome ID by controller (The dome SN number can be found on the side of the camera or on the package and user manual).

3. Broadcast ID:
The Broadcast ID is programmable.
When the broadcast ID is available, all domes connected to the control bus will react to the command. The default broadcast ID is 255.

4. SW2 ID:
SW2 is for Dome ID setting.
The setting is strictly according to binary system. If you are not familiar with binary system please look up the address setting chart (shown on the next page).

4. Address setting chart

ID	B1	B2	B3	B4	B5	B6	B7	B8
1	ON							
2		ON						
3	ON	ON						
4			ON					
5	ON		ON					
6		ON	ON					
7	ON	ON	ON					
8				ON				
9	ON			ON				
10		ON		ON				
11	ON	ON		ON				
12			ON	ON				
13	ON		ON	ON				
14		ON	ON	ON				
15	ON	ON	ON	ON				
16					ON			
17	ON				ON			
18		ON			ON			
19	ON	ON			ON			
20			ON		ON			
21	ON		ON		ON			
22		ON	ON		ON			
23	ON	ON	ON		ON			
24				ON	ON			
25	ON			ON	ON			
26		ON		ON	ON			
27	ON	ON		ON	ON			
28			ON	ON	ON			
29	ON		ON	ON	ON			
30		ON	ON	ON	ON			
31	ON	ON	ON	ON	ON			
32						ON		
33	ON					ON		
34		ON				ON		
35	ON	ON				ON		
36			ON			ON		
37	ON		ON			ON		
38		ON	ON			ON		
39	ON	ON	ON			ON		
40				ON		ON		
41	ON			ON		ON		
42		ON		ON		ON		
43	ON	ON		ON		ON		
44			ON	ON		ON		
45	ON		ON	ON		ON		
46		ON	ON	ON		ON		
47	ON	ON	ON	ON		ON		
48					ON	ON		
49	ON				ON	ON		
50		ON			ON	ON		
51	ON	ON			ON	ON		
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
52			ON		ON	ON		
53	ON		ON		ON	ON		
54		ON	ON		ON	ON		
55	ON	ON	ON		ON	ON		
56				ON	ON	ON		
57	ON			ON	ON	ON		
58		ON		ON	ON	ON		
59	ON	ON		ON	ON	ON		
60			ON	ON	ON	ON		
61	ON		ON	ON	ON	ON		
62		ON	ON	ON	ON	ON		
63	ON	ON	ON	ON	ON	ON		
64							ON	
65	ON						ON	
66		ON					ON	
67	ON	ON					ON	
68			ON				ON	
69	ON		ON				ON	
70		ON	ON				ON	
71	ON	ON	ON				ON	
72				ON			ON	
73	ON			ON			ON	
74		ON		ON			ON	
75	ON	ON		ON			ON	
76			ON	ON			ON	
77	ON		ON	ON			ON	
78		ON	ON	ON			ON	
79	ON	ON	ON	ON			ON	
80					ON		ON	
81	ON				ON		ON	
82		ON			ON		ON	
83	ON	ON			ON		ON	
84			ON		ON		ON	
85	ON		ON		ON		ON	
86		ON	ON		ON		ON	
87	ON	ON	ON		ON		ON	
88				ON	ON		ON	
89	ON			ON	ON		ON	
90		ON		ON	ON		ON	
91	ON	ON		ON	ON		ON	
92			ON	ON	ON		ON	
93	ON		ON	ON	ON		ON	
94		ON	ON	ON	ON		ON	
95	ON	ON	ON	ON	ON		ON	
96						ON	ON	
97	ON					ON	ON	
98		ON				ON	ON	
99	ON	ON				ON	ON	
100			ON			ON	ON	
101	ON		ON			ON	ON	
102		ON	ON			ON	ON	
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
103	ON	ON	ON			ON	ON	
104				ON		ON	ON	
105	ON			ON		ON	ON	
106		ON		ON		ON	ON	
107	ON	ON		ON		ON	ON	
108			ON	ON		ON	ON	
109	ON		ON	ON		ON	ON	
110		ON	ON	ON		ON	ON	
111	ON	ON	ON	ON		ON	ON	
112					ON	ON	ON	
113	ON				ON	ON	ON	
114		ON			ON	ON	ON	
115	ON	ON			ON	ON	ON	
116			ON		ON	ON	ON	
117	ON		ON		ON	ON	ON	
118		ON	ON		ON	ON	ON	
119	ON	ON	ON		ON	ON	ON	
120				ON	ON	ON	ON	
121	ON			ON	ON	ON	ON	
122		ON		ON	ON	ON	ON	
123	ON	ON		ON	ON	ON	ON	
124			ON	ON	ON	ON	ON	
125	ON		ON	ON	ON	ON	ON	
126		ON	ON	ON	ON	ON	ON	
127	ON	ON	ON	ON	ON	ON	ON	
128								ON
129	ON							ON
130		ON						ON
131	ON	ON						ON
132			ON					ON
133	ON		ON					ON
134		ON	ON					ON
135	ON	ON	ON					ON
136				ON				ON
137	ON			ON				ON
138		ON		ON				ON
139	ON	ON		ON				ON
140			ON	ON				ON
141	ON		ON	ON				ON
142		ON	ON	ON				ON
143	ON	ON	ON	ON				ON
144					ON			ON
145	ON				ON			ON
146		ON			ON			ON
147	ON	ON			ON			ON
148			ON		ON			ON
149	ON		ON		ON			ON
150		ON	ON		ON			ON
151	ON	ON	ON		ON			ON
152				ON	ON			ON
153	ON			ON	ON			ON
154		ON		ON	ON			ON
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
155	ON	ON		ON	ON			ON
156			ON	ON	ON			ON
157	ON		ON	ON	ON			ON
158		ON	ON	ON	ON			ON
159	ON	ON	ON	ON	ON			ON
160						ON		ON
161	ON					ON		ON
162		ON				ON		ON
163	ON	ON				ON		ON
164			ON			ON		ON
165	ON		ON			ON		ON
166		ON	ON			ON		ON
167	ON	ON	ON			ON		ON
168				ON		ON		ON
169	ON			ON		ON		ON
170		ON		ON		ON		ON
171	ON	ON		ON		ON		ON
172			ON	ON		ON		ON
173	ON		ON	ON		ON		ON
174		ON	ON	ON		ON		ON
175	ON	ON	ON	ON		ON		ON
176					ON	ON		ON
177	ON				ON	ON		ON
178		ON			ON	ON		ON
179	ON	ON			ON	ON		ON
180			ON		ON	ON		ON
181	ON		ON		ON	ON		ON
182		ON	ON		ON	ON		ON
183	ON	ON	ON		ON	ON		ON
184				ON	ON	ON		ON
185	ON			ON	ON	ON		ON
186		ON		ON	ON	ON		ON
187	ON	ON		ON	ON	ON		ON
188			ON	ON	ON	ON		ON
189	ON		ON	ON	ON	ON		ON
190		ON	ON	ON	ON	ON		ON
191	ON	ON	ON	ON	ON	ON		ON
192							ON	ON
193	ON						ON	ON
194		ON					ON	ON
195	ON	ON					ON	ON
196			ON				ON	ON
197	ON		ON				ON	ON
198		ON	ON				ON	ON
199	ON	ON	ON				ON	ON
200				ON			ON	ON
201	ON			ON			ON	ON
202		ON		ON			ON	ON
203	ON	ON		ON			ON	ON
204			ON	ON			ON	ON
205	ON		ON	ON			ON	ON
206		ON	ON	ON			ON	ON
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
207	ON	ON	ON	ON			ON	ON
208					ON		ON	ON
209	ON				ON		ON	ON
210		ON			ON		ON	ON
211	ON	ON			ON		ON	ON
212			ON		ON		ON	ON
213	ON		ON		ON		ON	ON
214		ON	ON		ON		ON	ON
215	ON	ON	ON		ON		ON	ON
216				ON	ON		ON	ON
217	ON			ON	ON		ON	ON
218		ON		ON	ON		ON	ON
219	ON	ON		ON	ON		ON	ON
220			ON	ON	ON		ON	ON
221	ON		ON	ON	ON		ON	ON
222		ON	ON	ON	ON		ON	ON
223	ON	ON	ON	ON	ON		ON	ON
224						ON	ON	ON
225	ON					ON	ON	ON
226		ON				ON	ON	ON
227	ON	ON				ON	ON	ON
228			ON			ON	ON	ON
229	ON		ON			ON	ON	ON
230		ON	ON			ON	ON	ON
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

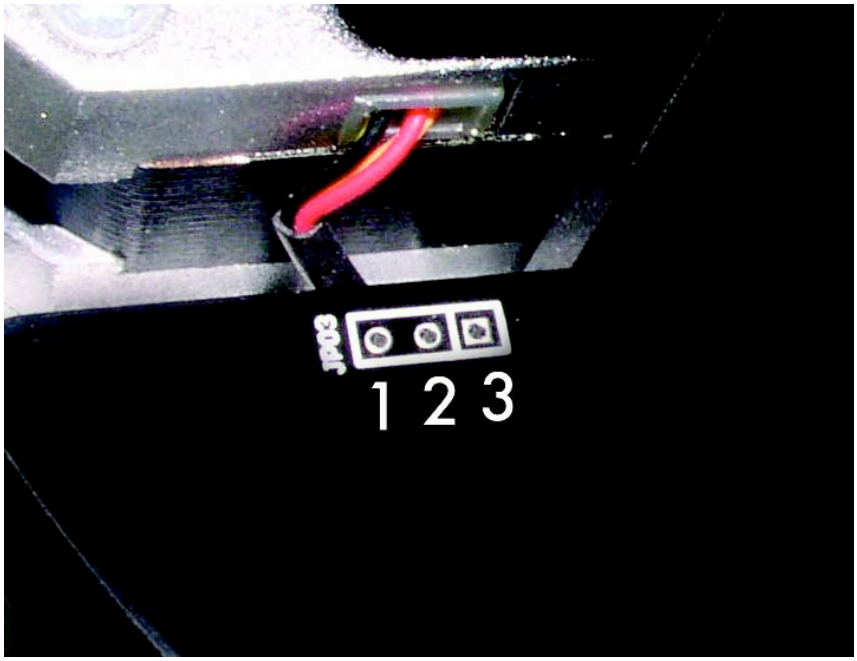
ID	B1	B2	B3	B4	B5	B6	B7	B8
231	ON	ON	ON			ON	ON	ON
232				ON		ON	ON	ON
233	ON			ON		ON	ON	ON
234		ON		ON		ON	ON	ON
235	ON	ON		ON		ON	ON	ON
236			ON	ON		ON	ON	ON
237	ON		ON	ON		ON	ON	ON
238		ON	ON	ON		ON	ON	ON
239	ON	ON	ON	ON		ON	ON	ON
240					ON	ON	ON	ON
241	ON				ON	ON	ON	ON
242		ON			ON	ON	ON	ON
243	ON	ON			ON	ON	ON	ON
244			ON		ON	ON	ON	ON
245	ON		ON		ON	ON	ON	ON
246		ON	ON		ON	ON	ON	ON
247	ON	ON	ON		ON	ON	ON	ON
248				ON	ON	ON	ON	ON
249	ON			ON	ON	ON	ON	ON
250		ON		ON	ON	ON	ON	ON
251	ON	ON		ON	ON	ON	ON	ON
252			ON	ON	ON	ON	ON	ON
253	ON		ON	ON	ON	ON	ON	ON
254		ON	ON	ON	ON	ON	ON	ON
Soft Add	ON	ON	ON	ON	ON	ON	ON	ON

◆ Resistor Jumper Setting

RS485 bus needs two 120-Ohm resistors at both ends. Set the 120-Ohm resistors of the two devices (keyboard or dome) at the farthest distance on RS485 bus. The default setting is OFF.

When choosing the first and second pins in JP02, the 120-Ohm termination resistor is connected.

When choosing the second and third pins in JP02, the termination resistor is unconnected.



APPENDIX II:
WIRE DIAMETER & TRANSMISSION CHART

The transmission distances listed below are the farthest ones recommended for each given wire diameter when the 24V AC voltage loss ratio is below 10% (for equipment powered by AC, the maximum voltage loss ratio allowed is 10%).

For example, a set of equipment with nominal power as 80VA, installed 35 feet (10m) away from transformer, needs a wire with a minimum diameter of 0.8000mm.

	Minimum Diameter of Wire (mm)			
Nominal Power (VA)	**0.8000**	**1.000**	**1.250**	**2.000**
10	283 ft / 86 m	451 ft / 137 m	716 ft / 218 m	1811 ft / 551 m
20	141 ft / 42 m	225 ft / 68 m	358 ft / 109 m	905 ft / 275 m
30	94 ft / 28 m	150 ft / 45 m	238 ft / 72 m	603 ft / 183 m
40	70 ft / 21 m	112 ft / 34 m	179 ft / 54 m	452 ft / 137 m
50	56 ft / 17 m	90 ft / 27 m	143 ft / 43 m	362 ft / 110 m
60	47 ft / 14 m	75 ft / 22 m	119 ft / 36 m	301 ft / 91 m
70	40 ft / 12 m	64 ft / 19 m	102 ft / 31 m	258 ft / 78 m
80	35 ft / 10 m	56 ft / 17 m	89 ft / 27 m	226 ft / 68 m
90	31 ft / 9 m	50 ft / 15 m	79 ft / 24 m	201 ft / 61 m
100	28 ft / 8 m	45 ft / 13 m	71 ft / 21 m	181 ft / 55 m
110	25 ft / 7 m	41 ft / 12 m	65 ft / 19 m	164 ft / 49 m
120	23 ft / 7 m	37 ft / 11 m	59 ft / 17 m	150 ft / 45 m
130	21 ft / 6 m	34 ft / 10 m	55 ft / 16 m	139 ft / 42 m
140	20 ft / 6 m	32 ft / 9 m	51 ft / 15 m	129 ft / 39 m
150	18 ft / 5 m	30 ft / 9 m	47 ft / 14 m	120 ft / 36 m
160	17 ft / 5 m	28 ft / 8 m	44 ft / 13 m	113 ft / 34 m
170	16 ft / 4 m	26 ft / 7 m	42 ft / 12 m	106 ft / 32 m
180	15 ft / 4 m	25 ft / 7 m	39 ft / 11 m	100 ft / 30 m
190	14 ft / 4 m	23 ft / 7 m	37 ft / 11 m	95 ft / 28 m
200	14 ft / 4 m	22 ft / 6 m	35 ft / 10 m	90 ft / 27 m

APPENDIX III

RS485 BUS BASIC KNOWLEDGE

1 Basic Property

RS485 Bus is specified by RS485 standards. It is of half-duplex data transmission cables with characteristic impedance as 120.
The maximum load capacity is 32 effective loads (including main controller and controlled equipment).

2 Transmission Distance

For 0.56mm (24AWG) twisted pair wires as data transmission cable, the maximum theoretical transmitting distances are as follows:

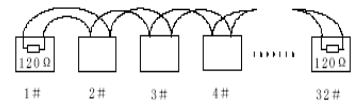
Baud Rate	Max。 Transmit Distance
2400BPS	1200m
4800BPS	1000m
9600BPS	800m

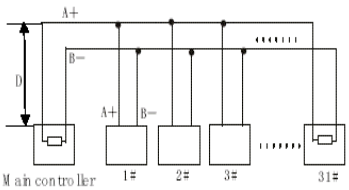
With thinner cables, installation of the dome in an environment with strong electromagnetic interference, or a large number of equipment connected to the RS485 Bus, the maximum transmitting distance will be decreased.

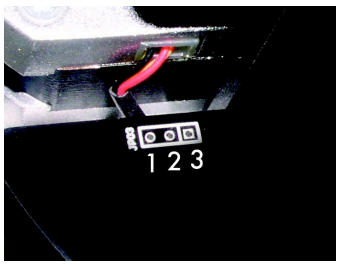
3 Connection and termination resistor

3-1 The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistors with 120-Ohm impedance at both ends of the connection (refer to following pictures).

Please refer to following picture for simple connection. 'D' should not exceed 7 metres.



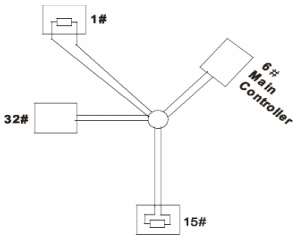




4 Best Practice

In some circumstances a star configuration connection is required. The termination resistors must be connected to the two equipment that are farthest away from each other, such as equipment 1# and 15# in the following diagram.

As the star configuration is not in conformity with the requirements of RS485 standards, problems such as signal reflections, lower anti-interference performance arise when the cables are long in the connection.
The reliability of control signals is decreased with the phenomena that the dome does not respond to or just responds at intervals to the controller, or does continuous operation without stop (refer to following picture).



5 RS485 Troubleshooting

Trouble	Possible Cause	Solution
Dome can do self-testing but cannot be controlled.	1. The address and baud rate settings of dome and the controller do not match. 2. The + and - connection of RS485 cable is incorrect. 3. Wiring is not fully connected. 4. There is break in the RS485 cable.	1. Change the address and baud rate of controller or dome. 2. Correct the connection. 3. Make sure the connections are fully connected. 4. Try using a new (or shorter length of) RS485 cable
The dome can be controlled but the operation is not smooth	1. The RS485 cable is not fully connected. 2. The wire on the RS485 cable is broken. 3. The dome is very far away from controller. 4. There are too many domes connected in the system.	1. Secure the connection. 2. Replace RS485 cable. 3. Add termination resistors to the system. 4. Install RS485 distributor.

APPENDIX IV
TROUBLE SHOOTING

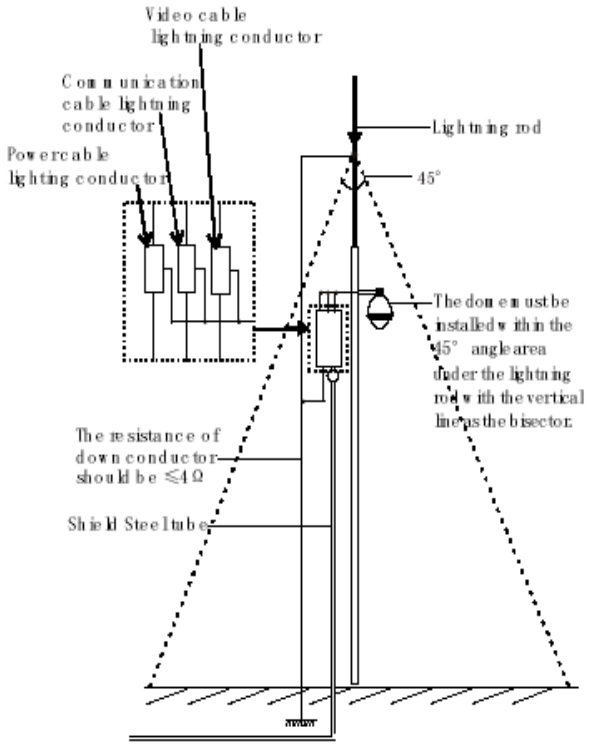
Problem	Cause	Solution
No movements, no video after power on	Red LED on circuit board is off: There is no AC power connected to the PCB Board. There is a power outage or problem of the transformer. Camera module is not correctly connected. Output Voltage of transformer is too low. The power board is not working.	Check the power connection and outlet make sure they are working properly. Check power supply and transformer to see is they are working properly. Check all power related cable. Examine the power on the dome side making sure it is above 16V.
Self-test is ok but dome cannot be controlled	Wrong dip switch setting; Control cable reversely connected or disconnected	Set the dip switch correctly according to operation manual. Check the control cable, making sure it is correctly and firmly connected.
Fan speed under 1000 rpm	Fan not firmly connected	Connect fan correctly. If speed is still under 1000 rpm, please contact dealer to replace the fan.
Blurred picture	Dome in manual focus mode or bubble is stained	Set focus to auto mode. Clear the bubble.

APPENDIX V:
LIGHTNING & SURGE PROTECTION

The product features TVS lightning proof technology to prevent from damage by lightning strike below 1500W and impulse signals such as surge.

It is necessary to abide by the following precautions to ensure electrical safety based on practical circumstances:

1. Keep the communication cables at least 50 meters away from high voltage equipment or cables.
2. Install outdoor cable laying-out under eaves as possible as you can.
3. In open areas, shield cables in a steel tube and conduct a single point ground to the tube. Using trolley wire is forbidden in such circumstances.
4. In areas with high risk of strong thunderstorm or in high faradic areas (such as high voltage transformer substation), extra strong lightning proof equipment must be installed.
5. Take the building's lightning proof requirements into account when surveying the lightning proof levels and the grounding of outdoor equipment and cable. Install in accordance with the national and industrial standards.
6. The system must be grounded with equal potentials. The earth ground connection must satisfy the anti-interference and electrical safety requirements and must not short-circuit with high voltage electricity. When the system is grounded separately, the resistance of down conductor should be + 4-Ohms.


Video cable lightning conductor
Communication cable lightning conductor
Power cable lighting conductor
Lightning rod
45°
The dome must be installed within the 45° angle area under the lightning rod with the vertical line as the bisector.
The resistance of down conductor should be ≤4Ω
Shield Steel tube

APPENDIX VI
WARRANTY

TECHNICAL SUPPORT:

For Technical Support for any Xvision product please contact your local distributor.

LIMITED WARRANTY:

This product is supplied with a 1 Year warranty. The Warranty excludes products that have been misused, (including accidental damage) and damage caused by normal wear and tear. In the unlikely event that you encounter a problem with this product, it should be returned to the place of purchase.

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